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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/523,177 | 01/28/2005 | Toshiro Kume | 10873.1479USWO | 1142 |
| 23552 | 7590 | 09/28/2006 | EXAMINER | |
| MERCHANT & GOULD PC P.O. BOX 2903 MINNEAPOLIS, MN 55402-0903 | | | ZHU, JOHN X | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2858 | |

DATE MAILED: 09/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/523,177

Applicant(s)

KUME ET AL.

Examiner

John Zhu

Art Unit

2858

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 and 25-28 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-21 and 25-28 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 January 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 1/28/2005.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "16" and "14" have both been used to designate a lower bound and reference characters "15" and "13" to designate an upper bound. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.

- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

2. The disclosure is objected to because of the following informalities: please amend the description of Fig. 5 (Page 12, lines 27-34) with appropriate reference characters.

3. The disclosure is objected to because of the following informalities: *isolation* (Page 1, line 11) should be changed to *insulation*.

Appropriate correction is required.

4. The disclosure is objected to because of the following informalities: T1 is not clearly defined. Fig. 4 marks it at a point just before a peak 12 while the specification defines it as the start of the application of the voltage (Page 13, lines 15-16).

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. More specifically, claim 1 recites *within a time period corresponding to a time period between an appearance of peak current due to an inrush current and obtaining of a constant current when a voltage is applied to a normal secondary battery precursor*. However, this limitation has no proper support because the time the peak current due to an inrush current is not discussed in the specification.

7. Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. More specifically, the specification has not made it clear how one would determine the time between the appearance of a peak current due to an inrush current and obtaining of a constant current for the system to determine defect. Furthermore, the specification and drawings do not support the claimed time period between peak and constant

current, but rather a time T1 corresponding to either a point before the peak 12 (Accordingly to Fig. 4) or start of application of the voltage (Accordingly to Spec, page 13, lines 15-16), and a time T2 corresponding to time of constant current.

For the purpose of examination, the time period of claim 1 will be read as the time period between the start of voltage application and obtaining of a constant current.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1, 5-7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ise et al. (JP 2000195565A) in view of Bertness (5,914,605).

With respect to claim 1, Ise discloses an inspection method of a secondary battery comprising applying a constant voltage (abstract) in between electrodes (Fig. 2, element 4), measuring a current (abstract) due to the application of the voltage, and determining the battery to be defective if a current value detected exceeds a predetermined current value (Claim 5) within a time period (time period read as any possible time period since the time period between application of the voltage and the time of constant current in a normal battery could be any time).

Ise does not explicitly disclose measuring a current at intervals of 1 ms or less.

However, measuring at small time intervals is not a novel idea and is commonly used in the art. Bertness discloses a battery tester that measures at 200 microseconds (Column 6, line 39).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ise to include the fast measurements of Bertness for the purpose of reducing incorrect measurement values in high noise measurement environments (Column 6, lines 40-43).

With respect to claim 9, Ise further discloses the system being able to be used on a lithium battery system (Detailed Description, paragraph 0017).

With respect to claims 5-7, although the references do not explicitly disclose the inspection voltage is set to be within a range between 20V and 75V or 20V and 35V per 1 micron thickness of the separator, or set to be within a range between 420V and 1575V, it is not patentably distinct to discover the optimum or workable ranges. See *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1995).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the values as taught by Ise into optimum ranges for the purpose of providing optimal charging voltage to the electrodes.

Art Unit: 2858

10. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ise and Bertness as applied to claim 1 above, and further in view of Janah et al. (5,650,620).

With respect to claims 2 and 3, Ise and Bertness disclose all aspects of the claims except for the reference current value is set based on a current when a voltage is applied to a normal secondary battery precursor and the plurality of reference current values are set depending upon time.

Janah discloses a testing of an insulating element that compares measured values with a reference curve (Fig. 1) constructed with respect to time using a reference insulating element (Column 3, lines 43-46).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ise to include a reference curve with respect to time constructed using a reference insulating element for the purpose of establishing whether or not the given insulative element conforms to a reference insulative element (Abstract, lines 9-11).

11. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ise and Bertness as applied to claim 1 above, and further in view of Bailey (5,709,962).

With respect to claim 8, Ise and Bertness disclose all aspects of the claim except for the separator thickness has a thickness of 25 microns or less.

Bailey discloses a cell tester device with a separator thickness between electrodes of being 25 microns or less (Column 5, lines 56-59).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ise to include the thickness as taught by Bailey for the purpose of testing electrochemical cells with small gap distances between electrodes.

12. Claims 4, 10, 11, 13-15, 17-19, 21, 25 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ise in view of Bertness and Janah.

With respect to claims 4, 10, 11 and 25, Ise discloses a device and inspection method of a secondary battery comprising applying a constant voltage (abstract) in between electrodes (Fig. 2, element 4), measuring a current (abstract) due to the application of the voltage, and determining the battery to be defective if a current value detected exceeds a predetermined current value (Claim 5) within a time period (the time period read as any possible time period since the time period between application of the voltage and the time of constant current in a normal battery could be any time).

Ise does not explicitly disclose measuring a current or setting reference current values at intervals of 1 ms or less, determining the precursor to be defective if the current has a value beyond a predetermined allowable range calculated based on a current waveform when a voltage is applied to a normal secondary battery precursor, or arithmetic operation means for the comparison.

However, measuring at small time intervals is not a novel idea and is commonly used in the art. Bertness discloses a battery tester that measures at 200 microseconds (Column 6, line 39).

Janah discloses arithmetic operation means (Fig. 2, element 4, comparator unit) determining an insulative element to be defective if the measured value is greater than a range (difference between template curve G and reference curve C) determined based on values obtained from a reference insulative element (continuous curve, hence values are 1 ms or less).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ise to include the fast measurements of Bertness for the purpose of reducing incorrect measurement values in high noise measurement environments (Column 6, lines 40-43). It would have been further obvious to one of ordinary skill in the art at the time the invention was made to modify Ise to include the predetermined range as taught by Janah for the purpose of to establish whether or not the give insulative element conforms to a reference insulative element (Abstract, lines 9-11).

With respect to claims 18, 19 and 27, the recited limitations are identical to those in claims 10, 11 and 25, with the only exception being applying a current, measuring and comparing a voltage instead of applying a voltage, measuring and comparing a current.

This difference, however, is not novel due to the intrinsic relationship between voltage and current. To apply a current to a capacitor necessarily needs a voltage applied to the corresponding electrodes. To measure a current necessarily needs to measure the voltage.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ise, Bertness and Janah to apply current and measure voltage for the purpose of simplifying the testing of a secondary battery system using current sources and voltage sensors.

With respect to claims 17 and 21, Ise further discloses the system being able to be used on a lithium battery system (Detailed Description, paragraph 0017).

With respect to claims 13-15, although the references do not explicitly disclose the inspection voltage is set to be within a range between 20V and 75V or 20V and 35V per 1 micron thickness of the separator, or set to be within a range between 420V and 1575V, it is not patentably distinct to discover the optimum or workable ranges. See *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1995).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the values as taught by Ise into optimum ranges for the purpose of providing optimal charging voltage to the electrodes.

13. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ise, Bertness and Janah as applied to claim 10 above, and further in view of Keech (6,392,416 B1).

With respect to claim 12, Ise, Bertness and Janah disclose all aspects of the claim except for the inspection voltage being increased at a constant speed.

Keech discloses an inspection voltage being increased at a constant speed (Fig. 4, electrode ramp).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ise to include the constant increasing inspection voltage as taught by Keech for the purpose of measuring a substantially constant current through the electrode (Column 3, lines 4-6) for comparison to determine electrode integrity.

14. Claims 16 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable Ise, Bertness and Janah as applied to claims 10 and 18 above, and further in view of Bailey.

With respect to claims 16 and 20, Ise, Bertness and Janah disclose all aspects of the claim except for the separator thickness has a thickness of 25 microns or less.

Bailey discloses a cell tester device with a separator thickness between electrodes of being 25 microns or less (Column 5, lines 56-59).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ise to include the thickness as taught by Bailey for the purpose of testing electrochemical cells with small gap distances between electrodes.

15. Claims 26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ise, Bertness and Janah as applied to claims 25 and 27 above, and further in view of Tatah (5,563,508).

With respect to claims 26 and 28, Ise, Bertness and Janah disclose all aspects of the claims except for the current and voltage measurement means is an oscilloscope.

However, using an oscilloscope to measure currents and voltages is not a novel idea and is commonly used in the art. Tatah discloses using an oscilloscope to measure current and voltage (Claim 4).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ise to include the oscilloscope as taught by Tatah for the purpose of providing an integrated system that can take multiple measurements of voltage and current.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Sisemore (5,780,994) discloses a secondary battery charging method utilizing comparing with a characteristic reference curve. Kimura (5,420,513) discloses a dielectric monitoring apparatus that utilizes comparison with a reference current generator. Takeuchi et al. (JP 2003157911 A) discloses a battery voltage measuring and manufacturing method.

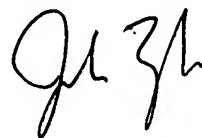
Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Zhu whose telephone number is (571) 272-5920. The examiner can normally be reached on M-F, 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Hirshfeld can be reached on (571) 272-2168. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

John Zhu
Examiner
Art Unit 2858

JZ



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